

Bringing cancer care closer to home: Mauritania opens first nuclear medicine centre

By Omar Yusuf

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—Moustapha Mounah,
Director, National Oncology
Centre, Mauritania

The opening of the Islamic Republic of Mauritania’s first ever nuclear medicine centre with IAEA support in late 2014 will lead to improved access to modern diagnostics and treatment, as well as lower costs. The new facility is part of the country’s National Oncology Centre, which opened in 2010, with support from the IAEA. The centres offer comprehensive services in diagnosing, treating and managing cancer and other diseases in Mauritania and the surrounding region.

our cancer patients to Morocco, Tunisia or elsewhere. However, now we treat practically all our patients locally,” said Abdoulaye Mamadou Wagne, a radiotherapy technician at the National Oncology Centre.

Nuclear medicine and radiotherapy are two key areas of medicine that use radiation and atoms that emit radiation, known as radionuclides, to diagnose, treat and manage diseases (see box).

Facing cancer head-on

Cancer kills more than 7.6 million people every year — more than HIV/AIDS, tuberculosis and malaria combined. It is increasingly recognized as a major public health problem across Africa. The burden of the disease has worsened as rising living standards have led to lifestyle and environmental changes, such as unhealthy diets, pollution and physical inactivity, that increase the incidence of cancer.

For many years, Mauritania, one of Africa’s 34 least developed countries, has struggled to address the financial and human costs related to cancer. Haematological malignancies and solid tumours, for example, require specialized treatments that were not available at Mauritanian hospitals, requiring patients to seek treatment abroad. Cancer of the cervix, breast, prostate, liver and ovary are among the most common in the country.

Today, the two centres provide radiotherapy and nuclear medicine services using a linear particle accelerator and a high dose rate brachytherapy machine. They also employ more than 20 medical professionals trained through IAEA fellowships, training courses and expert visits.

“We are very enthusiastic about this relationship [with the IAEA], which has begun to deliver very positive results in a very short time,” said President of Mauritania, Mohamed Ould Abdel Aziz,



Workers at Mauritania’s National Oncology Centre, established with support from the IAEA.

(Photo: O. Yusuf/IAEA)

The country has come a long way in cancer care over just a few years, said Moustapha Mounah, Director of the National Oncology Centre. “There were huge challenges ahead of us. We had no infrastructure, no equipment and no human resources to treat our patients,” he said. “Now, after four years, Mauritania is able to provide radiotherapy and nuclear medicine services, with very sophisticated materials, and operated by Mauritanians.”

Local access has made life easier for patients

“Before working with the IAEA we had no radiopharmacy technicians, and we sent all



at the inauguration of the new facility in December 2014. “In terms of medical treatment of cancer, we are now in a fairly comfortable position.”

The National Oncology Centre is now planning to share the new know-how with neighbouring countries, so that cancer diagnosis and care can improve throughout the Sahel region. “We have plans to ensure that our centre becomes a reference centre and a training centre for the region,” Mounah said. “We are becoming a centre whose work is comprehensive and which is exceptionally well-equipped.”

Supporting transformation through cooperation

The IAEA has supported Mauritania since 2004 through its technical cooperation programme, assisting the government to transform the country into a nation able

to safely and cost-effectively use nuclear techniques. The country now uses nuclear technologies and tools to fight pests and animal disease, map water tables underground, as well as monitor and measure radiation dose levels to protect health care professionals, the public and the environment from ionizing radiation. It is also training engineers and economists to use energy planning tools and databases related to nuclear energy.

Although Mauritania still has plenty to do, the country has made great strides in a few short years, giving patients access to better care closer to home that will undoubtedly support the fight against cancer, President Abdel Aziz said. “We believe that in the future this important relationship for our country, and a model in the subregion, will continue to evolve. Given these developments, we are very confident that things will continue to improve,” he said.

THE SCIENCE

Nuclear medicine and radiotherapy

Cancer that was once considered unmanageable and fatal can now be diagnosed earlier and treated more effectively using nuclear techniques, giving patients a fighting chance and, for many, a significant chance for a cure.

Nuclear medicine uses tiny amounts of radioactive substances called radioisotopes for the diagnosis and treatment of some health conditions. Some of the procedures are performed outside of the body, while others, with the help of radiopharmaceuticals that contain the radioisotopes, are absorbed into a patient’s body resulting in a net benefit. The small amounts of radiation emitted by the radioisotopes in the radiopharmaceuticals can be tracked by special cameras that create images of the specific tissues or organs under investigation. Some diagnostic imaging techniques, like X-rays, reveal static pictures of different body parts, while others, like positron emission tomography, can reveal the dynamics of how the body functions.

Radiation therapy, or radiotherapy, uses beams of radiation or radiation sources to target and kill cancer cells. When the therapy is applied to a cancerous growth or tumour, it is reduced in size or, in some cases, disappears altogether. Radiopharmaceuticals can also be used at higher dose levels to provide treatment. Careful calibration of these different therapy techniques help to target cancer cells while minimizing the radiation exposure to healthy cells.



A gamma camera traces and detects radiopharmaceuticals to produce diagnostic images. (Photo: E. Estrada Lobato/IAEA)